

## TITLE OF THE INVENTION

### Seat Hammock of Child-Care Instrument

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## BACKGROUND OF THE INVENTION

### Field of the Invention

The present invention relates to a seat hammock mounted on a body of a child-care instrument such as a baby carriage, a child safety seat, a baby chair/bed and the like, to form a seat and more particularly, it relates to a seat hammock of a child-care instrument in which an angle between a seat portion and a backrest portion can be changed.

### Description of the Background Art

A seat hammock of a child-care instrument is made of a sewed cloth normally, and continuously forms a seat surface portion to be positioned under buttocks of a child and a backrest surface portion to be positioned behind a back of the child. When the backrest portion of the child-care instrument is reclined, the backrest surface portion of the seat hammock is inclined such that a boundary line with the seat surface portion may be a bending center. In addition, when the child-care instrument is folded and the seat portion and the backrest portion thereof approach each other, the backrest surface portion of the seat hammock is also inclined such that the boundary line with the seat surface portion may be the bending center.

Fig. 1 shows a baby carriage disclosed in Japanese Unexamined Patent Publication No. 8-175395. An illustrated baby carriage 1 can be switched between a form of a chair state and a form of a bed state and comprises a body 2 and a seat hammock 3 mounted on the body 2. A backrest portion of the baby carriage 1 can be reclined.

The body 2 of the baby carriage has a pair of handrail members 4 which is one of members constituting the seat portion, and a push rod 5 connected to a rear end of the handrail 4 and extending upward. The seat hammock 2 has a seat surface portion 6 extending almost horizontally on a seat surface forming member of the body 2, and a backrest surface portion 7 extending to rise upward from a rear edge of the seat surface portion 6.

Fig. 2 shows a baby carriage disclosed in Japanese Unexamined

Patent Publication No. 9-86417. An illustrated baby carriage 10 comprises a body 11 and a seat hammock 12. The seat hammock 12 has a seat surface portion 14 extending almost horizontally on a seat forming member of the body 11, and a backrest surface portion 13 extending to rise upward from a rear edge of the seat surface portion 14. The baby carriage body 11 comprises a pair of handrails 15 and side plates 16 mounted on inner surfaces of the handrail members 15 so as to cover gaps formed under the handrails.

In the case of the baby carriage 1 shown in Fig 1, since there is gaps above both sides of the seat surface portion 6 of the seat hammock, that is, under the handrails 4, a child seated in the seat could put a hand in the gap.

According to the baby carriage 10 shown in Fig. 2, since the side plate 16 is provided in the inner side surface of the handrail 15, the above problem can be solved to some extent. However, since the side plate 16 has to be especially provided in addition to the body 11 and the seat hammock 12 of the baby carriage, the number of parts is increased.

Fig. 3 shows an improved seat hammock 20. Similar to the above described seat hammocks, the illustrated seat hammock 20 comprises a seat surface portion 21 and a backrest surface portion 22. The backrest surface portion 22 has a pair of upper side surface portions 22a extending to rise upward from its both sides.

The seat hammock 20 shown in Fig. 3 is different from the seat hammocks 3 and 12 in that a pair of lower side surface portions 23 extending to rise upward from both side edges of the seat surface portion 21 is provided. A lower edge of each lower side surface portion 23 and a side edge of the seat surface portion 21 are sewed along a connection line 24. Furthermore, a rear edge of the lower side surface portion 23 and a front edge of the upper surface portion 22a are sewed along a connection line 25.

According to the seat hammock 20 shown in Fig. 3, since the seat hammock itself has the lower side surface portion covering gaps at both sides of the seat surface portion, the number of parts is not increased. However, the following problems arise.

That is, the seat hammock 20 is made of a soft sewed cloth. It is needless to say that the lower side surface portion 23 is also made of a soft sewed cloth. In the case of the baby carriage which can be changed

between the form of the chair state and the form of the bed state, when the backrest surface portion 22 is reclined at the maximum to become the bed state, the lower side surface portion 23 extends flatways in a state there is no wrinkle. Therefore, when the backrest portion of the baby carriage is raised to form the chair state, the soft lower side surface portion 23 is bent inwardly in wedges, which could cause the child to feel uncomfortable. Alternatively, the soft lower side surface portion 23 could protrude outward or form wrinkles, which could interfere with a frame of the baby carriage body.

10 In order to provide stiffness in the lower side surface portion 23, it is considered to mount a core in the lower side surface portion 23. In this case, when the backrest portion is raised, the lower side surface portion 23 is prevented from protruding outwardly because of the frame of the baby carriage body to some extent, but it cannot be prevented from bending inwardly. Therefore, in the state of the chair, a gap is formed between the lower side surface portion 23 and a side surface forming member of the baby carriage body, which is not preferable in view of safety.

#### SUMMARY OF THE INVENTION

20 It is an object of the present invention to provide a seat hammock in which a gap is not formed between it and a seat portion side surface forming member of a child-care instrument body to enhance safety, without increasing the number of parts.

A seat hammock according to the present invention is mounted on a child-care instrument in which an angle between a seat portion and a backrest portion can be changed, to form a seat. Here, a fact that the angle between the seat portion and the backrest portion can be changed includes a case where the backrest portion is reclined. As another case, even in a case of a child-care instrument in which the backrest portion is not reclined, the above fact includes a case where the seat portion and the backrest portion approach each other at the time of a folding operation.

A seat hammock comprises a seat surface portion, a backrest surface portion, and lower side surface portions. The backrest surface portion extends to rise upward from a rear edge of the seat surface portion in a used state. The lower side surface portions extend to rise upward from both side

edges of the seat surface portion in the used state. Each lower side surface portion has a bottom connection end connected to a side edge of the seat surface portion, and upper connection end connected to an upward extension frame member extending upward from a rear end of a member forming the seat portion of the child-care instrument.

According to the above constitution, the position of the bottom connection end and the position of the upper connection end of the lower side surface portion are always constant and not moved in the state the baby carriage is used. More specifically, even when the backrest portion of the child-care instrument is reclined, a triangle formed by a front position (first fixed point) of the bottom connection end of the lower side surface portion, a rear position (second fixed point) of the bottom connection end of the lower side surface portion, and a position (third fixed point) of the upper connection end of the lower side surface portion is not moved. As a result, a plane state of the lower side surface portion can be stably maintained and there is no gap formed between the lower side surface portion and the seat portion side surface forming member of the child-care instrument body.

According to one embodiment, the lower side surface portion has a back connection end provided behind a back surface of the backrest surface portion so as to overlap with it and connected to the back surface of the backrest surface portion at a position inside of the backrest surface portion at a distance from both side edges thereof. Thus, since the back connection end of the lower side surface portion is provided behind the back surface of the backrest surface portion so as to overlap with it, the forward movement of the backrest surface portion will not influence on the plane state of the lower side surface portion maintained by the above three fixed points.

According to one embodiment, the backrest surface portion includes a pair of upper side surface portions extending to rise upward from both sides in a used state. In this case, the back connection end of the lower side surface portion is provided behind a back surface of the upper side surface portion so as to overlap with it.

The lower side surface portion includes a rigid core, for example. When the core is provided, the plane state of the lower side surface portion can be further stably maintained. In addition, when the child-care instrument is folded down, the movement of the lower side surface portion

can be constant and stable because of the core. Normally, since the body part of the child-care instrument exists outside of the lower side surface portion of the seat hammock, as the upward extension frame member of the body and the seat portion forming member approach each other in accordance with the folding operation of the child-care instrument, the lower side surface portion with core is folded down inwardly.

When the child-care instrument comprises a handrail member, the upper connection end of the lower side surface portion is connected to a member connected to a rear end of the handrail member of the child-care instrument and extending upward, for example.

The upper connection end of the lower side surface portion may be directly or indirectly connected to the upward extension frame member of the child-care instrument body. As an example of the indirect connection, for example, the upper connection end of the lower side surface portion of the seat hammock is connected to the upper side surface portion and the upper side surface portion is connected to the upward extension frame member.

A reclining angle of the backrest surface portion of the child-care instrument can be changed, for example. Besides, the child-care instrument is folded so that the backrest surface portion and the seat portion approach each other, for example. As the child-care instrument, there are a baby carriage, a child safety seat, a baby chair/bed and the like.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view showing a baby carriage disclosed in Japanese Unexamined Patent Publication No. 8-175395;

Fig. 2 is a perspective view showing a baby carriage disclosed in Japanese Unexamined Patent Publication No. 9-86417;

Fig. 3 is a perspective view showing an example of a seat hammock having a lower side surface portion;

Fig. 4 is a front view showing an embodiment of the present invention;

Fig. 5 is a back view showing the seat hammock shown in Fig. 4;

Fig. 6 is a perspective view showing a used state of the seat hammock shown in Fig. 4;

Fig. 7 is a perspective view showing the part shown in Fig. 6 which is

viewed from the rear side direction; and

Fig. 8 is a schematic sectional view taken along line 8 - 8 in Fig. 5.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

5       An embodiment of the present invention is described with reference to Figs. 4 to 8.

      An illustrated seat hammock 30 is made of a sewed cloth and mounted on a baby carriage to form a seat. Figs. 6 and 7 show a part of a body of the baby carriage. The baby carriage comprises a backrest portion which can  
10   be reclined and takes a form of a bed state when the backrest portion is reclined at the maximum. In addition, the baby carriage is folded down so that the backrest portion and a seat portion may approach each other.

      As shown in Figs. 4 and 5, the seat hammock 30 comprises a seat surface portion 31 to be positioned under buttocks of a child, a backrest  
15   surface portion 32 to be positioned behind a back of the child, and a pair of lower side surface portions 33. The backrest surface portion 32 rises upward from a rear edge of the seat surface portion 31 when the baby carriage is used in a form of a chair state. The pair of lower side surface portions 33 extend to rise upward from both side edges of the seat surface  
20   portion 31. According to an exploded state of the seat hammock 30 shown in Figs. 4 and 5, the seat surface portion 31, the backrest surface portion 32 and the pair of lower side surface portions 33 extend on a plane.

      The backrest surface portion 32 comprises a pair of upper side surface portions 32a extending to rise upward from its both sides, and a head guard  
25   surface portion 32b extending to rise upward from its upper edge when the baby carriage is used in the form of the bed state, especially. A set button 34 is mounted on a side end portion of each upper side surface portion 32a.

      Each lower side surface portion 33 of the seat hammock 30 comprises a bottom connection end 33a connected to a side edge of the seat surface  
30   portion 31, a back connection end 33b provided behind a back surface of the backrest surface portion 32 so as to overlap with it and connected to the back surface of the backrest surface portion 32 at a position inside of the backrest surface portion 32 at a distance from both side edges thereof, and an upper connection end 33c. A set button 35 is mounted on an end portion  
35   of the upper connection end 33c. Fig. 8 is a schematic sectional view taken

along line 8 — 8 in Fig. 5, in which positions of the back connection ends 33b of the pair of lower side surface portions 33 are clearly shown.

As can be clear from Fig. 5, a rigid core 36 is mounted on a back surface of each lower side surface portion 33.

5 As shown in Fig. 7, the body of the baby carriage has a pair of handrail members 40 as one of members constituting the seat portion. An upward extension frame member 41 extending in the vertical direction is connected to a rear end of each handrail member 40. In the illustrated embodiment, the upward extension frame member 41 forms a push rod of the baby  
10 carriage. In a case of a baby carriage which can be changed in position so as to be pushed from behind and pushed face-to-face, the upward extension frame member 41 and the push rod are separately provided.

As can be clear from Figs. 6 and 7, the upper side surface portion 32a of the seat hammock 30 is wrapped around the upward extension frame member 41 of the baby carriage to be fixed thereto. The set button 34 of  
15 the upper side surface portion 32a engages with a receive clip fixed to the upward extension frame member 41.

Furthermore, the upper connection end 33c of the lower side surface portion 33 of the seat hammock 30 is also wrapped around the upward  
20 extension frame member 41 to be fixed thereto. The set button 35 of the lower side surface portion 33c engages with a receive clip fixed to the upward extension frame member 41.

Even when the backrest portion of the baby carriage body is reclined, positions of the body structure members of the handrail member 40, the  
25 upward extension frame member 41 and a seat surface supporting member are not changed. Therefore, the positions of the bottom connection end 33a and the position of the upper connection end 33c of the lower side surface portion 33 are always constant and not moved in the state the baby carriage is used. In other words, a triangle formed by a front position (first fixed  
30 point) of the bottom connection end 33a of the lower side surface portion, a rear position (second fixed point) of the bottom connection end 33a of the lower side surface portion 33, and a position (third fixed point) of the upper connection end 33c of the lower side surface portion 33 is not moved. As a result, a plane state of the lower side surface portion 33 can be stably  
35 maintained when the baby carriage is used in the state of the chair, it is

used in the state of the bed, and the backrest portion is reclined.

Since each lower side surface portion 33 has the core 36, the plane state of the lower side surface portion 33 can be further stabilized. As shown in Figs. 6 and 7, according to the illustrated embodiment, since there  
5 is no space between a seat portion side surface forming member of the baby carriage body and the lower side surface portion 33 of the seat hammock 30, it is superior in view of safety. Since the back connection end 33b of the lower side surface portion 33 is provided behind the back surface of the backrest surface portion 32 so as to overlap with it, even when the backrest  
10 surface portion 32 is moved forward in accordance with the reclining operation, the plane state of the lower side surface portion 33 maintained by the above three points is not influenced.

In the case of the baby carriage shown in Figs. 6 and 7, as the baby carriage is folded down, a front portion of the seat surface and the upward  
15 extension frame member 41 approach each other. More specifically, in Fig. 7, the front portion of the seat surface moves counterclockwise and the upward extension frame member 41 is turned around clockwise. Since the upward extension frame member 41, rear legs having rear wheels and the like exist outside of the lower side surface portion 33 having the core 36, the  
20 lower side surface portion 33 is folded inwardly in accordance with the folding operation of the baby carriage.

Although one embodiment of the present invention was described with reference to the drawings, the above described and illustrated embodiment only shows the present invention illustratively. Therefore, various kinds of  
25 modifications and variations can be added within the same scope or an equivalent scope as in the present invention. Some of them are illustratively listed and described hereinafter.

(1) According to the illustrated embodiment, the upper connection end 33c of the lower side surface portion 33 was directly mounted on the upward  
30 extension frame member 41 of the baby carriage body. As its variation, the upper connection end of the lower side surface portion 33 may be indirectly mounted on the upward extension frame member 41. For example, the upper connection end of the lower side surface portion may be connected to the upper side surface portion and the upper side surface portion may be  
35 connected to the upward extension frame member. In this case also, the



position of the upper connection end of the lower side surface portion is constant and not moved while the baby carriage is used.

(2) Although the backrest surface portion of the seat hammock has the upper side surface portion in the illustrated embodiment, the backrest surface portion may not have the upper side surface portion.

(3) The core of the lower side surface portion may be omitted.

(4) As the child-care instrument, other than the baby carriage, a child safety seat, a baby chair/bed and the like can be employed. In other words, the present invention can be applied to the child-care instrument in which an angle between the seat portion and the backrest portion can be changed.